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THE PROBLEMS OF A SMALL WATER WORKS PLANT FROM THE MANAGER'S STANDPOINT[1]

By T. C. Gordon

The electric power plant and water system at Little Falls, Minn., are both owned and operated by the same company. The power is generated from falls in the river. The two public utilities are housed in the same building and the same men operate both. Water is pumped directly into the main from the Mississippi River, there being no storage reservoir or filtration system, and there are no auxiliary fire pumps.

There are two pumps having a maximum discharge of 2,225,000 gallons and this is taxed during fires of any great extent. The author is not familiar with what other towns of similar size (7000) are doing, but he knows that with the pumps and a fire pressure of 125 pounds it is hard to get a satisfactory pressure a mile or more away from the station. None of the mains are less than 6-inch and in all of the business section they are 8 and 10 inches.

The pumping station is three-quarters of a mile from the business district. When it is necessary to repair the main feeder, all preliminary work is carried out as far as possible before midnight, when the pump pressure is reduced or the pumps shut down entirely if necessary, while the leak is repaired. Repairs to laterals are made behind closed valves, of which there is a liberal supply. There are only three dead ends in the system. Repairs with lead wool were tried but the work was not satisfactory so that lead and oakum were again used. The company does not care to experiment with new ideas if old methods are satisfactory.

In the town the service from the main to the curb is owned by the property owner, but when a leak appears the company is advised that its main is broken and usually has to make the repairs, but only occasionally is it repaid. The company taps its mains and furnishes the corporation cock. As a general thing the sewer and water pipe are laid in the same ditch, the sewer, of course, being much lower than the water service.

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[1] Abstract of paper read before the Minnesota Section, November 10, 1917.

All mains are laid 8½ feet below street grade. Frost troubles are confined to services, which are thawed out with electric current using a 10-kilowatt transformer mounted on a wagon with connection to a hydrant and to a service pipe inside the premises. A 50-volt tap on the transformer is used, thereby getting a heavier flow of current. A frozen service is thawed out in less than five minutes. Last winter many services froze which had not frozen in previous years. Fire hydrants are closely watched and steamed out with a portable steamer. Hydrants are inspected after every fire to see that they have drained properly. A great deal of trouble has been experienced with roots plugging up the drain on fire hydrants.

When the system was installed (1890) the contract provided that a supply of pure and wholesome water should be provided taken from the Mississippi River. It was then generally taken for granted and understood that flowing water purified itself in every 15 or 20 miles of travel. The company went along on this theory for several years and must have pumped out of the river millions of germs but without any typhoid outbreak. It installed one of the first hypochlorite plants in the state, much to the disgust of the station operators who had to look after it. As soon as the liquid chlorine method of purification was effected the company tore out the chloride plant and installed the liquid chlorine. From the standpoint of continuity of service the chlorine system is not entirely satisfactory. Parts will get out of order and cause shut-downs, but any shut-down means the pumping of impure water and this of course is something that must be avoided.

An auxiliary pumping plant is to be located within three blocks of the business center. The new unit will be motor-driven with a remote control switch at the present pumping station, and will be used especially for fire protection and in time of trouble at the main plant. It is also planned to install a filtration plant and a standpipe with motor-driven pumps to operate at off-peak periods, These improvements are awaiting an easier market.